

PATENT CLAIMS

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1. ~~An installation arrangement for a vehicle drive unit having an internal combustion engine (2) and a transmission (4), having~~

- a crankshaft (12) mounted in a housing (14) of the internal combustion engine (22) and a parallel auxiliary shaft (22) which is driven by this crankshaft (12) and is used for transmitting power to the transmission (4),
- an output drive shaft (26) from the transmission (4), which, via a branch (40), drives input drive shafts (46, 44) of vehicle wheels (28, 30) which are arranged at the side alongside the drive unit, characterized in that

- the crankshaft (12) is arranged such that it lies in the longitudinal direction (L) of the vehicle,
- the cylinders of the internal combustion engine (2) are arranged in at least two cylinder rows (6, 8; 6, 10) at an angle to one another, with
- one of these cylinder rows (6) being arranged such that it lies horizontally or essentially horizontally.

2. The arrangement as claimed in claim 1, characterized in that the crankshaft (12) and the auxiliary shaft (22) are each arranged in accommodating, vertically running planes at a distance from one another in such a manner that an auxiliary shaft plane (NE) which accommodates the auxiliary shaft (22) is identical to a vehicle longitudinal center plane, and a crankshaft plane (KE) which accommodates the crankshaft (12) is arranged offset at a distance (A) from it to one side (S1, S2).

3. The arrangement as claimed in claim 2, characterized in that the output drive shaft (26) of the transmission is articulated on a rear wall (32), located at the rear in the direction of travel (F) of the vehicle, of the internal combustion engine (2), and the center point (MP) of an opening (34) provided for this purpose in the housing (14) of the internal combustion engine (2) is arranged at a distance to one side (S1, S2) of the vehicle longitudinal center plane such that the crankshaft plane (KE) lies between this center point (MP) and the auxiliary shaft plane (NE).

4. The arrangement as claimed in claim 3, characterized in that the housing (14) of the internal combustion engine (2) has at least two separation planes (TE1, TE2), with a crank housing upper part (16) which carries the cylinder rows (6, 8; 6, 10) and a bearing traverse (18) adjoining one another in the one separation plane (TE1), and the crankshaft (12) and the auxiliary shaft (22) being mounted in this one separation plane (TE1), and with the bearing traverse (18) and a housing lower part (20) adjoining one another in the other separation plane (TE2).

5. The arrangement as claimed in claim 4, characterized in that the separation planes (TE1, TE2) are arranged parallel to one another, and incline through an angle (W) with respect to the crankshaft plane (KE) and incline with respect to the camshaft plane (NE).

6. The arrangement as claimed in claim 5, characterized in that a cylinder center plane (ZME1) of the horizontal or essentially horizontal cylinder row (6) is arranged at right angles to the crankshaft plane (KE), runs parallel and underneath a transmission plane (GE) which accommodates the auxiliary shaft (22), and the center point (MP) of the opening (34) is located underneath the transmission plane (GE).

7. The arrangement as claimed in claim 6, characterized in that the branch (40) is in the form of a differential (38) and is arranged in the housing lower part (20), and a longitudinal axis (D) of an intermediate shaft (48), which is connected between this differential (38) and at least one of the input drive shafts (46), runs underneath the center point (MP).

8. The arrangement as claimed in claim 7, characterized in that the intermediate shaft (48) passes through the bearing traverse (18) within a bearing neck (50) associated with it.

9. The arrangement as claimed in one or more of the preceding claims, characterized in that

the internal combustion engine (2) has a further cylinder row (8; 10) which is arranged between the cylinder rows (6, 10; 6, 8) that are at an angle to one another.

10. The arrangement as claimed in claim 9, characterized in that, seen clockwise in the direction of travel (F), the cylinder rows are arranged with the horizontal cylinder row (6) first, the further cylinder rows second, followed by the third cylinder rows (8 and 10).

11. The arrangement as claimed in claim 10, characterized in that the second (8) and the third (10) cylinder row are arranged symmetrically with respect to the crankshaft plane (KE) in the manner of a V-engine, and a cylinder center plane (ZME2) of the second cylinder row (8) lies on the angle bisector between the cylinder center plane (ZME1) of the first and the cylinder center plane (ZME3) of the third cylinder row (10).

12. The arrangement as claimed in one or more of the preceding claims, characterized in that,

in a plan view of the vehicle, the angle (α) enclosed between the input drive shafts (44, 46) and the vehicle longitudinal center plane is less than 90 degrees.

13. The arrangement as claimed in claim 12, characterized in that,

in a view of the vehicle from the front, the angle (β) enclosed between the input drive shaft (44, 46) and the vehicle longitudinal center plane is less than 90 degrees.

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